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CATALOGUE

Tiger beetles of Romania (Coleoptera: Carabidae: Cicindelinae) in the Collections of "Grigore Antipa" National Museum of Natural History, Bucharest

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Abstract

The paper deals with eleven species and subspecies of tiger beetles of Romania. The specimens preserved in the collections of "Grigore Antipa" National Museum of Natural History were revised. Distribution maps based on the examined material are presented for each species.

Keywords

Cicindelinae, collection, *Calomera*, *Cicindela*, *Cephalota*, *Cylindera*, Romania.

Introduction

Detailed studies on tiger beetles regarding their natural history, population dynamics, communities, patterns of worldwide species richness, and the taxonomy of a particular subgroup have produced much information (Pearson and Vogler 2001). Some authors include tiger beetles as a distinct subgroup (subfamily Cicindelinae) within the family Carabidae, while most entomologists consider tiger beetles to form their own family, Cicindelidae (Pearson and Vogler 2001). The tiger beetles group counts approximatively 2900 species and subspecies with a worldwide distribution except for polar regions and some oceanic islands (Wiesner 2020).

The tiger beetle fauna of Romania is still poorly known. In Montandon's paper (1906) seven species of Cicindelidae were reported from Romania, here Romania

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being represented only by the provinces: Moldavia, Dobroudja and Wallahia. In the Catalogue of Transylvanian beetles nine tiger beetle were reported (Petri 1912). A volume of Romanian tiger beetle fauna was published by Panin (1952) but some of his data were incorrect or doubtful (Jaskuła 2007). In 1994, Burnaz reported five tiger beetle species preserved in the Josef Mallász collection (Museum of Dacian and Roman Civilisation, Deva). Nitzu (2007) published a checklist of tiger beetles including 17 species and subspecies for Romania. Cassola and Jaskuła (2004) revised the Romanian tiger beetles and concluded that 11 or 12 species occur in the country. Moreover, Jaskuła (2007) gave an updated list of tiger beetle species of Romania concluding that *Cephalota circumdata* and *Cicindela sylvatica sylvatica* were not recorded for Romanian fauna, *Cicindela monticola rumelica* needs confirmation to occur in Romania, and *Cicindela hybrida hybrida* and *Cicindela soluta soluta* are present in Romanian fauna. Jaskuła et al. (2016) have demonstrated that Pleistocene glaciations and associated sea level changes in the Mediterranean/Pontic region had a profound effect on the genetic diversity and distribution of *Calomera littoralis*, generating some level of cryptic diversity.

The aim of this paper is to summarize data of the distribution of tiger beetle species in Romania based on the "Grigore Antipa" Museum collections.

Material and Methods

The tiger beetles of Romania are preserved in three collections: the Collection of Romanian Coleopterans (CRC), the Collection of Palaearctic Coleopterans (CPC) and the Collection of Cicindelinae (CC), recently formed. All the specimens belonging to the Collections of Romanian and Palearctic Coleopterans were revised by the authors. The material was former identified by Jules Bourgeois, Arnold Lucien Montandon, Eduard Fleck, Friedrich Deubel, Nicolae Săvulescu, Atena Roșca, Ștefan Negru and Vasile Vicol.

The new collection gathers old specimens previously not included in the Romanian or Palearctic collections, collected by Arnold Lucien Montandon (a French citizen, that worked at the Museum during 1896–1907 and was interested in Heteroptera, Coleoptera and Orthoptera), Friedrich Deubel (an amateur entomologist from Brașov that collected beetles in mountainous areas of Romania and a part of his collection was bought by the Museum in 1923), Eduard Fleck (who collected insects in Bucegi Mts and Dobrogea; his entomological collection was preserved in the Museum since the beginning of the 20th century), Emil Várady, Richard Canisius (an entomologist and painter that worked at the Museum during 1907–1934), Nicolae Săvulescu (a physician, passionate about insects; he was an external collaborator of the Romanian Fauna group of Romanian Academy and a collaborator of the Museum). In addition, the new collection includes specimens collected by the specialists of the "Grigore Antipa" Museum and their collaborators during various research projects in Romanian (the Danube Delta Biosphere Reserve, southern Dobrogea, Romanian

littoral of the Black Sea, the Great Romanian Field, Bucharest and surroundings, Maramureș region, Piatra Craiului National Park, Putna-Vrancea Natural Park, site of community importance – Frumoasa - ROSCI0085). Furthermore a part of material was donated by Igor Ceianu, Mihai Șerban Procheș, Viorel Ungureanu, Vladimir Brădescu, Levente Székely, Daniel Kurzeluk and Victor Gheorghiu. The specimens were identified by Eduard Fleck, Arnold Lucien Montandon, Sergiu Panin, Mircea Alexandru Ieniștea (a renowned entomologist and professor, and a collaborator of the Museum), Charles Kerremans (a Belgian entomologist specialised in Coleoptera, especially Buprestidae and Cicindelinae), Ștefan Negru (a coleopterologist, worked at the Museum during 1963–1970), Atena Roșca (a coleopterologist, worked at the Museum during 1954–1976), Vladimir Brădescu, Igor Ceianu (a forestry engineer, passionate about insects, a collaborator of the Museum), Viorel Ungureanu, Rodica Serafim, Melania Stan and were revised by the authors.

A small part of the Museum's collections was capitalized by publishing the results of faunistic research in various parts of the country: Fleck (1904), Montandon (1906), Negru (1957), Săvulescu and Popescu-Gorj (1964), Negru and Roșca (1967), Roșca (1976), Serafim and Maican (2004), Stan et al (2016).

Specimens were identified according to Csiki (1946), Panin (1952), Székessy (1958), Hůrka (1996), Gebert (2006), Matalin (2014), Lompe (2020). Nomenclature follows the Catalogue of Palearctic Coleoptera (Lóbl and Smetana 2003).

For each species geographical distribution and habitat types based on literature data are presented. Examined material includes the localities, the number of the specimens and the sex (for most of them), the collecting date, the name of the collector and county. For each locality the collecting data are presented in chronological order. Distribution maps (Figs 1–11) were created using Google Earth Pro (for localization)and QGIS Desktop 2.18.25 with GRASS 7.4.2. for final map drawing. Maps contain public information as of the Licence for Open Governance v1.0, i.e. limits of administrative units (Crăciunescu 2006-2021).

Abbreviations of the collectors names: A. C. = Alin Constantinescu; A. D. = Andreea Drăghici; A. L. M. = Arnold Lucien Montandon; A. M. = Amelie Marcus; A. P. = Aurel Papadopol; A. P. G. = Aurelian Popescu-Gorj; A. R. = Atena Roșca; A. S. = Alexandra Sofronie; A. U. = Aurel Udrescu; Ag. P. = Angela Petrescu; Al. I. = Alexandru Iftime; Au. S = Aurora Stănescu; C. A. = Costică Adam; C. C. = Cristina Constantinescu; C. Ca. = Cristina Calefariu; Cr. H. = Cristina Hoinic; C. P. = Corneliu Pârvu; C. T. = Constantin Tărăbuță; D. D. = Dan Dumitrescu; D. G. = D. Gîrlean; D. K. = Daniel Kurzeluk; D. M. = Dan Manoleli; D. Mu. = Dumitru Murariu; D. P. = D. Pîrvescu; D. R. = Dorel Ruști; D. S.= Dragoș Scăunașu; Ed. F. = Eduard Fleck; E. I. = Elena Iorgu; E. V. = Emil Váradi; F. D. = Friedrich Deubel; G. A. = Gabriela Andrei; G. C. = Gabriel Chișamera; G. P.= George Popovici; I. C. = Ioan Căpușă; I. D. = Ion Drăghia; I. M. = Ioana Matache; I. S. = Ioan Stănoiu; Ig. C. = Igor Ceianu; Ig. S. = Igor Sienkiewicz; I. Șt. I = Ionuț Ștefan Iorgu; L. M. = Liviu Moscaliuc; L. S = Levente Székely; M. N. = Marinela Năzăreanu; M. B. = Mihai Băcescu; M. S. = Melania Stan; M. Ș. P. = Mihai Șerban Procheș; Ma. T. = Marilena Taloi; M. T. = Matei Tălpeanu;

M. W. = Medeea Weinberg; Mi. S. = Mihai Stănescu; N. G. = Nicolae Găldean; N. S. = Nicolae Săvulescu; R. C. = Richard Canisius; R. S. = Rodica Serafim; Șt. N. = Ștefan Negru; V. B. = Vladimir Brădescu; V. G. = Victor Gheorghiu; V. I.-R. = Victoria Iuga-Raica; V. V. = Vasile Vicol; V. U. = Viorel Ungureanu; X. P. = Xenia Palade; X. S. = Xenia Scobiola; Z. I. = Zoltán Iszák.

Abbreviations of the county names in Romania: AB – Alba; AG – Argeș; AR – Arad; B – București; BC – Bacău; BN – Bistrița Năsăud; BH – Bihor; BR – Brăila; BV – Brașov; BT = Botoșani; BZ – Buzău; CJ – Cluj; CL – Călărași; CS – Caraș Severin; CT – Constanța; CV – Covasna; DB – Dâmbovița; DJ – Dolj; GJ – Gorj; GL – Galați; GR – Giurgiu; HD – Hunedoara; HR – Harghita; IF – Ilfov; IL – Ialomița; MH – Mehedinți; MM – Maramureș; MS – Mureș; NT – Neamț; OT – Olt; PH – Prahova; SB – Sibiu; SJ – Sălaj; SM – Satu Mare; SV – Suceava; TL – Tulcea; TR – Teleorman; VS – Vaslui; VL – Vâlcea; VN – Vrancea.

Other abbreviations: a.s.l. – above sea level; MGAB – "Grigore Antipa" National Museum of Natural History; Mt/Mts – Mountain/s; spec./specs – specimen/s

Results

The present paper includes data on 11 species and subspecies of tiger beetles, belonging to four genera: *Calomera* (1 species), *Cephalota* (2 species), *Cicindela* (4 species) and *Cylindera* (4 species). For each species the distribution map based on examined material is given.

Calomera littoralis nemoralis (Olivier, 1790)

Examined material: Sărat Lake: 1♀, coll. A. L. M.; 1♀, 27.05.1955, N. S.; 1♂, 28.05.1955, N. S.; 5♂, 7♀, 29.05.1955, N. S. (BR); 1♀, Balta Albă, 18.05.1967, A. P. (BZ); 1♀, Budești, 24.06.1947, X. P. (CL); Agigea: 2♂, 10.08.1956, A. R.; 2♀, 7–8.08.1962, I. D.; 6♂, Comarova forest, 15.08.1962, I. D.; 3♂, 10♀, Mamaia, 12.07.1950, N. S.; Mangalia: 1♀, coll. A. L. M.; 1♀, 27.08.1963, N. S.; 1♀, Tașaul Lake, 29.04.1959, legit unknown; 1♂, Techirghiol, coll. A. L. M. (CT); 1♀, Desa, 4.08.1982, C. P.; 1♂, Poiana Mare, 5.08.1982, C. P. (DJ); 3♀, Ciovârnășani, 14.07.1961, N. S.; [Drobeta] Turnu Severin: 1♂, 1♀, 5.08.1963, N. S.; 2♂, 2.08.1964, X. S. (MH); C. A. Rosetti: 1♀, 6.09.1965, X. S.; 3♂, 6♀, 11.07.1969, N. S; Caraorman: 2♀, 7.07.1963, Șt. N.; 1♀, 7.05.1967, M. W.; 1♂, 6♀, 9–10.05.1967, X. S.; 5♀, 13.05.1967, X. S. and I. D.; 1♀, 20.09.1967, Șt. N.; 1♂, 6.05.1967, M. W.; 1♀, 17.06.1967, I. D.; 12♂, 2♀, 14.07.1967, N. S.; 10♂, 6♀, 11.08.1967, X. S. and I. D. and Șt. N.; 3♂, 4♀, 14.08.1967, I. D.; 2♀, 16.08.1967, I. D.; 7♀, 5.05.1968, A. P. G.; 2♂, 3♀, 11–12.05.1968, Șt. N.; 1♀, 13.05.1968, X. S.; 1♂, 31.05.1968, I. D.; 1♀, 2.06.1968, I. D.; 1♂, 5.07.1968, A. P. G.; 1♂, 1♀, 6.07.1968, M. W.; 1♂, 7.07.1968, Șt. N.; 4♀, 3.10.1968, A. P. G and X. S.; 2♂, 28.08.1969, Șt. N.; 1♀, 29.08.1969, M. W.; 2♂, Cardon, 18.07.1962, A. P.-G.; 2♀, Cocoș Monastery, 16.07.1973, A. C.; 1♀, Crișan, 2.09.1969, Șt. N.; Letea forest: 2♂, 11.07.1962, I. D.; 1♂,

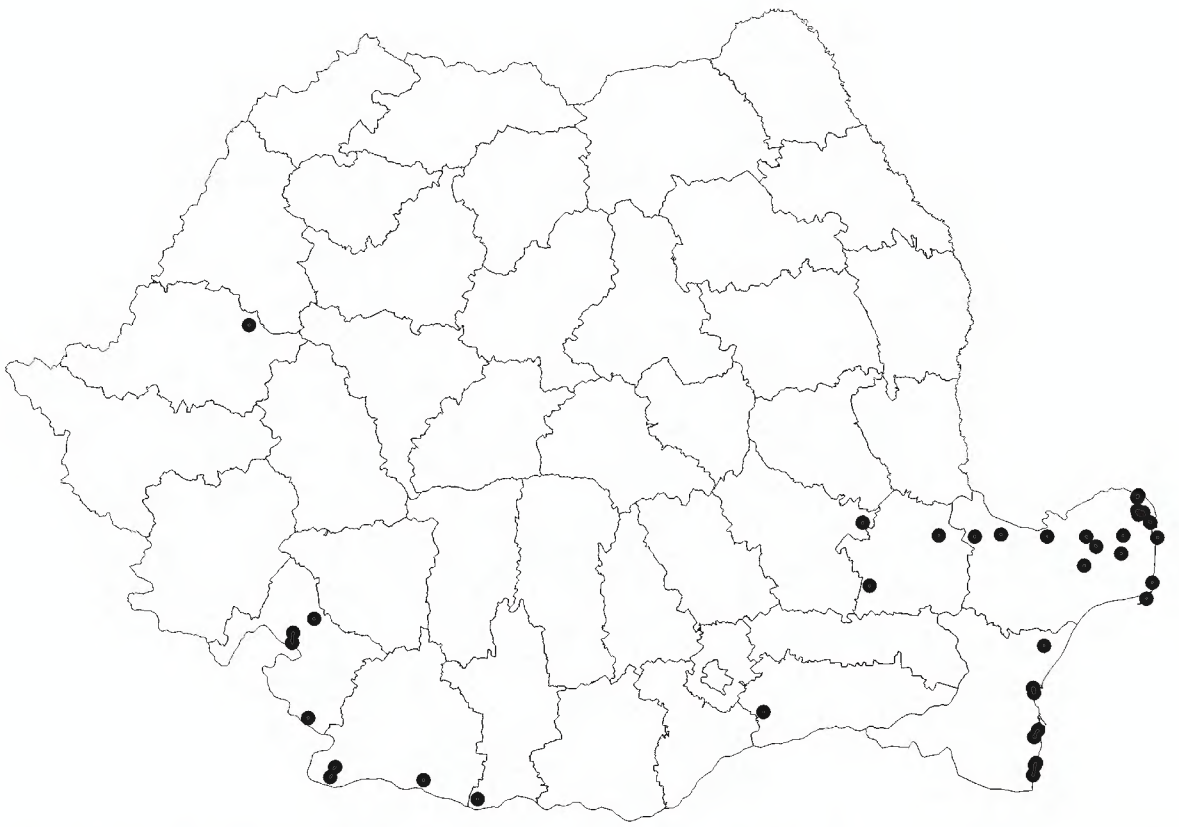

Figure 1. Distribution of *Calomera littoralis nemoralis* in Romania based on examined material.

13.07.1962, A. P. G.; 1♂, 30.06.1963, I. D.; 5♂, 4♀, 14.06.1970, N. S.; 1♀, 18.08.1981, A. P. G.; 1♀, 22.08.1981, A. P. G.; 1♂, Litcov Channel, on the bank, 1.09.1969, Șt. N.; Periprava: 1♀, 13.07.1962, A. P. G.; 1♂, 1.07.1965, A. P. G.; 1♂, 3.09.1965, X. S.; 1♀, 4.09.1965, X. S.; 1♀, 15.07.1966, X. S.; 3♀, 16.07.1966, Șt. N.; 2♀, 13.10.1966, X. S.; 31♂, 26♀, 11.06.1967, N. S.; 41♂, 54♀, 17.07.1967, N. S.; 2♂, Sarinasuf, 24.06.1963, X. S.; Sfântu Gheorghe: 7♂, 7♀, 17.06.1958, N. S.; 1♂, 8.07.1972, M. W.; 4♂, 3♀, 25.05.1971, A. P. G.; 2 ♂, 26.05.1971, A. P. G.; 1♀, 30.06.1971, M. W.; 1♂, 3.07.1971, A. P. G.; 2♂, 5.07.1971, A. P. G.; 1♀, 10.07.1971, A. P. G.; 4♂, 7♀, 13–14.07.1971, X. S. and A. P. G.; 1♂, 10.08.1971, A. P. G.; 1♂, 14.07.1972, A. P. G.; 1♂, 19.09.1981, M. W.; Sulina: 3♂, 2♀, coll. A. L. M.; 1♂, 13.07.1966, A. P. G.; 2♂, 3♀, 7.07.1968, A. P. G. and Șt. N.; 2♂, 2♀, 8.07.1968, M. W.; 2♀, 9.07.1968, Șt. N.; 5♂, 5♀, 10.07.1971, A. P. G. (TL) (CRC); 1♂, Mangalia, 9.06.1903, coll. Ed. F. (CT); 1♀, Periprava, 20.07.1960, Ig. S.; Sfântu Gheorghe: 1♂, 3.07.1971, A. P. G; 1♂, 5.07.1971, A. P. G.; Caraorman Levee: 1♀, 16.07.1967, I. D.; 1♀, 11.08.1967, I. D.; 3♂, 1♀ Sulina, 9.07.1968, Șt. N. (CPC); 1 spec., Rănușa, Moneasa, 31.05.1964, V. B. (AR); 1 spec., Ulmu Pond, 28.05.1950 (BR); Agigea: 3 specs, 21.08.1954, I. C.; 1 spec., 08.1956; 10 specs, Comorova forest, 15.08.1962, I. D.; 3 specs, Constanța, 12.07.1940; 1 spec., Istria, 15.08.2010, L. S.; Mamaia: 1 spec., 25.07.1950, I. C.; 1 spec., 14.08.1954, I. C.; 4 specs, 14.08.1984, Ig. C.; 1 spec., Mangalia, 9.06.1903, Ed. F.; 2 specs, Olimp Resort, 16.07.1987, M. Ș. P. (CT); 1 spec., Nedeia Pond, 10.06.1962, A. P. G. (DJ), 1 spec., Halânga, 2.08.1964; 3 specs, Vrata forest, Gârla Mare, 25.05.1963 (MH); 4 specs, Potelu Pond, 16.05.1959 (OT); 1 spec., C. A. Rosetti, 10.06.1981, C. P.; Caraorman Levee: 1 spec., 8.05.1967, M. W.; 2 specs 9.05.1967, X. P.; 2 specs, 11.05.1967, M. W.; 1 spec., 13.05.1967, I. D.; 1 spec. 17.05.1967, I. D.; 1 spec., 23.05.1967, Șt. N.; 1 spec., 11.08.1967, I. D.; 3

specs, 14.08.1967, I. D.; 12 specs, 11.08.1967, X. S. P.; 2 spec, 9.05.1968, A. P. G.; 3 specs, 11–12.05.1968, Șt. N.; 1 spec., 2.07.1968, Șt. N.; 3 specs, 6.07.1968, M. W.; 3 specs, 3.10.1968, X. S.; 2 specs, 16.07.1969, X. S.; 6 specs, 7.08.1984, V. G.; 3 specs, 9.081984, C. P.; 1 spec., 23.05.1996, D. R.; Crișan: 3 specs, 17.08.1967, X. S.; 1 spec., 26.08.1969, Șt. N; 3 specs, 29.08.–3.09.1969, Șt. N.; 1 spec., Greci, 6.06.1973, M. W.; Letea Levee: 2 specs, 28.07.1970, N. S.; 6 specs, Cardon (Letea), 18.07.1962, A. P. G.; 1 spec., 6.07.1982, L. S.; 1 spec., 3.04.2009, I. Ș. I.; 1 spec., 20.05.2015, G. C.; 1 spec., 29.04.2019, I. Ș. I.; 1 spec., 1.05.2019, E. I.; 9 specs, Maliuc, Mila 26, 7.08.1991, R. S.; 1 spec., Nebunu Lake, 7.07.2015, E. I.; Periprava: 1 spec., 26.07.1957, Ig. S.; 1 spec., 24.07.1958, Ig. S.; 2 specs, 11.07.1960, A. P. G.; 2 specs, 11.07.1962, A. P. G., 3 specs, 13.07.1962, A. P. G.; 1 spec., 2.10.1963, X. S.; 1 spec., 13.07.1964, Șt. N.; 7 spec., 15.07.1964, X. S.; 2 specs, 16–17.07.1964, Șt. N.; 1 spec., 16.04.1966, Șt. N.; 5 specs, 16.04.1966, I. D.; 1 spec.,18.07.1966, Șt. N.; 1 spec., 14.09.1966, X. S.; 6 spec, 29.07.1967, N. S.; 1 spec., 1.04.1974, V. B.; 5 specs, 20–21.08.2007, L. S.; Sacalin Island: 1 spec., 12.07.1987, D. R.; 2 specs, 15.05.1992, Ag. P.; 1 spec., 20.06.2009, G. C.; 4 specs, Sarinasuf, 24.06.1963, X. S.; Sulina: 3 specs, 20–23.07.1964, Șt. N.; 2 specs, 9.07.1967, Șt. N.; 3 specs 7.07.1968, A. P. G. and Șt. N.; 1 spec., 8.07.1968, M. W.; 1 spec., 10.07.1971, A. P. G.; 1 spec., 14.061974, N. S.; Sfântu Gheorghe: 1 spec., 25.05.1971, V. B.; 2 specs, 25.05.1971, A. P. G.; 3 specs, 13.07.1971, A. P. G.; 13 exp 14.07.1971, X. S.; 4 specs 10.08.1971, X. S. and A. P. G.; 6 specs, 12.08.1971, X. S. and A. P. G.; 1 spec., 14.08.1971, X. S.; 2 specs, 7.09.1971, X. S.; 2 specs, 10–16.07.1972, M. W. and A. P. G.; 1 spec., 19.09.1981, M. W.; 1 spec., Tulcea, 23.06.1963, Ig. S. (TL) (CC)

Remarks: In the Romanian Coleoptera Collection specimens were identified as *Cicindela lunulata nemoralis* Olivier belonging to different forms: *discors* Dejean, 1822, *disapicalis* Beuthin, 1892, *fabricii* Beuthin, 1892 *koltzei* Beuthin, 1890, *lugens* Grandi 1906 and *rectangularis* Beuthin, 1892.

Records: Mangalia (Fleck 1904; Montandon 1906; Negru and Roșca 1967; Serafim and Maican 2004), Turda, Szamosfalva [Someșeni], Klausenburg [Cluj], Schassburg [Sighișoara], Salzburg [Ocna Sibiului] (Petri 1912), the regions of the country (1950–1952): Constanța, Galați, Putna, Buzău, București, Teleorman, Dolj, Arad, Cluj, Sibiu (Panin 1952), Comarova forest (Negru 1957; Nagy 1972; Serafim and Maican 2004), Constanța, Năvodari (Nagy 1972), Agigea, Mamaia (Serafim and Maican 2004), Dunavățu de Jos, Măcin, Sfântu Gheorghe, Sulina, Histria, 2 Mai – Vama Veche (Cassola and Jaskuła 2004), Ianca Lake, Plopu Lake, Samova Lake, Histria-saltmarshes near Sinoe lake (Jaskuła 2007).

Distribution: West, Central, South and South-East Europe up to the Caspian Sea in the east (Guéorguiev and Guéorguiev 1995).

Habitat: *Calomera littoralis nemoralis* lives in different habitats: salty marshes, sandy sea beaches, banks of rivers and lakes (Jaskuła et al. 2019).

Cephalota (*Taenidia*) *chiloleuca* (Fischer von Waldheim, 1820)

Examined material: Sărat Lake: 7♂, 8♀, 6.07.1952, N. S.; 5♂, 12♀, 14.06.1961, N. S.; 3♂, 5♀, 15.06.1961, N. S.; 13♂, 20♀, 17.06.1961, N. S.; 2♂, 10♀, 17.06.1962, N. S.; 26♂, 38♀, 18.06.1962, N. S. (BR); 1♂, Cotu Ciorii, 18.08.1957 (BZ); 2♂, Nuntași, 28.061964, Șt. N. (CT); 8♂, 3♀, Praid, 14.07.1982, V. V. (HR); 1♂, 1♀, Salzburg [Ocna Sibiului] (SB); Letea forest: 2♂, 2♀ 22.07.1964, A. P. G.; 2♂, 3♀, 20.07.1966, A. P. G. and Șt. N.; 3♂, 2♀, Sarinasuf, 24.06.1963, X. S.; 1♀, Sfântu Gheorghe, 12.08.1971, A. P. G.; 1♂, Sulina, 8.07.1964, A. P. G. (TL) (CRC); Sărat Lake: 1♂, coll. A. L. M.; 1♂, 25.09.1963, X. P. (BR); 1♀, Chilia Veche, 27.06.1963, X. P. (TL) (CPC); 1♂, 3♀, Sărat Lake, coll. A. L. M.; 2♀, 25.06.1995, M. Ș. P. (BR); 2♂, 1♀,Vulcanii Noroioși, 15.08.2015, G. C. (BZ); Istria: 1♂, 1♀, Histria City, 19.07.1973; 6♂, 5♀, 30.07.1984, N. G. and D. M.; 1♀, Turda, 3.08.1982, N. S. (CJ); 1♀, Limanu, 28.06.1950; 3♀, Tuzla, coll. A. L. M. (CT); 1♂, Praid, 07.1982, V. V. (HR); 1♀, Ocna Sibiului 28.08.1955 (SB); 2♂, 2♀, Chilia Veche, 27.06.1963, X. P.; 1♂, 2♀, Enisala, 28.06.1991, N. G.; 1♀, Jurilovca, 2.08.1984, N. G.; Letea: 1♂, 5.07.1965, A. P. G.; 2 ♂, 20.07.1966, Șt. N. and X. S.; 1♂, Periprava, 22.07.1964, N. S.; 1♂, 1♀, Sarinasuf, 24.06.1963, X. S. (TL) (CC).

Records: Deva, Reussmarkt [Miercurea Sibiului], Salzburg [Ocna Sibiului], Baassen [Bazna], Turda, Szamosfalva [Someșeni], Eidisch [Ideciu], Zsabenitza [Jabenița], Mezőzáh [Zău de Câmpie] (Petri 1912), regions of the country (1950–1952): Hunedoara, Cluj, Mureș, Sibiu, Buzău, Galați, Constanța (Panin 1952), Limanu (Negru and Roșca 1967), Vulcanii Noroioși, Sărat Lake, Dunavățu de Jos, Histria-Sinoe Lake (Cassola and Jaskuła 2004), Histria-saltmarshes near Sinoae Lake, Plopu Lake (Jaskuła 2007), Salt-Gorge from Praid (Barti 2016–2017).

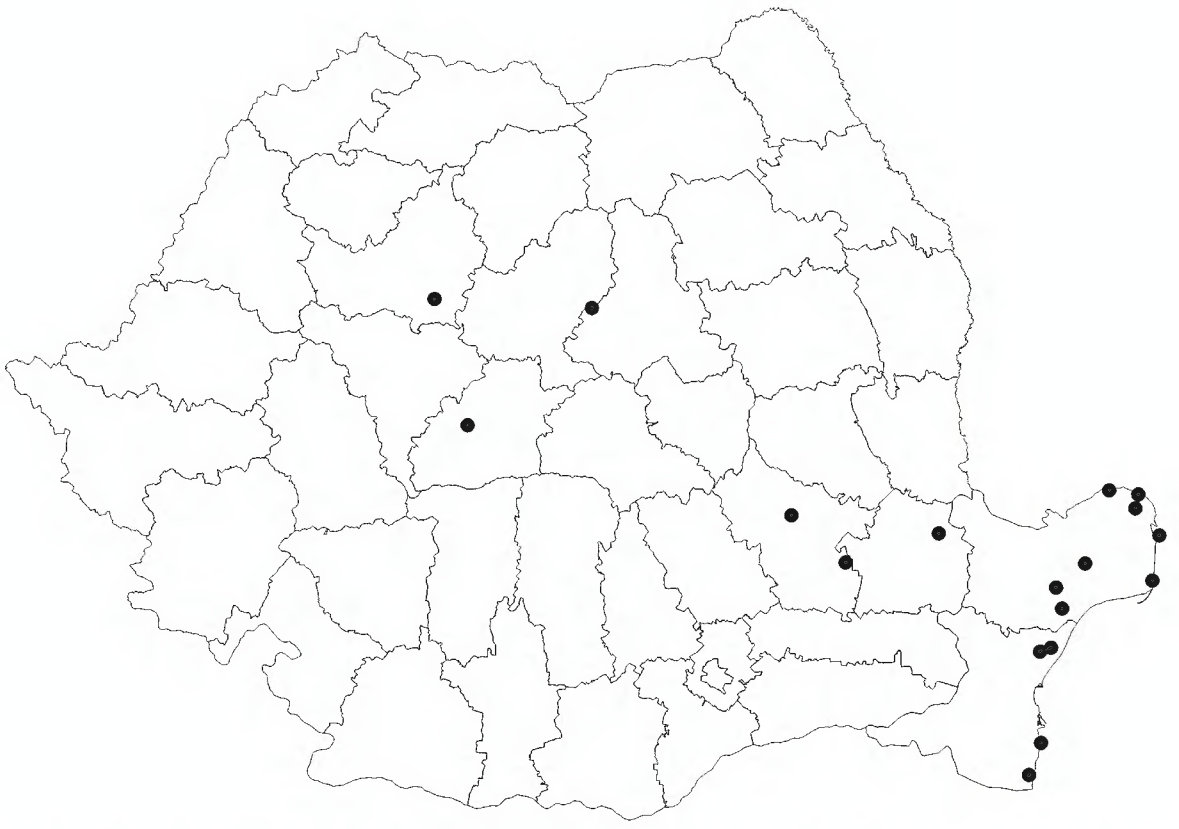

Figure 2. Distribution of *Cephalota chiloleuca* in Romania based on examined material.

Distribution: Hungary, Romania, South-East Europe, West Siberia, Central Asia to China (Guéorguiev and Guéorguiev 1995).

Habitat: *Cephalota chiloleuca* is common on saltmarshes (Jaskuła et al. 2019).

Cephalota (*Taenidia*) *elegans stigmatophora* (Fischer von Waldheim, 1825)

Examined material: Sărat Lake: 1♂, 6.07.1952, N. S., 2♂, 12.06.1956, N. S.; 17♂, 18♀, 17.06.1962, N. S. (BR); Turda: 1♂, 4♀, 3.08 1982, V. V.; 1♂, 2♀, 4.08.1982, V. V. (CJ); 1♂, Praid, 14.07.1982, V. V. (HR); 1♂, Periprava, 2.07.1963, X. S. (TL) (CRC); 1♂, 1♀, Szamosfalva [Someșeni] (CJ) (CPC); 1♀, Sărat Lake, 12.06.1956, N. S. (BR); 1♂, 1♀, Vulcanii Noroioși, Pâclele Mari, 29.06.2002, V. U (BZ); 1♀, Turda, 3.08 1982, V. V. (CJ); 3♂, 1♀, Istria, 30.07.1984, D. M. and N. G. (CT) (CC).

Records: Turda, Szamosfalva [Someșeni] (Petri 1912), Cluj and Galați regions (1950–1952) (Panin 1952), Turda (Cassola and Jaskuła 2004).

Distribution: Ukraine, Romania, Balkan Peninsula, Crimea (Guéorguiev and Guéorguiev 1995).

Habitat: The subspecies is found in the plains, especially on the banks of rivers (Panin 1952).

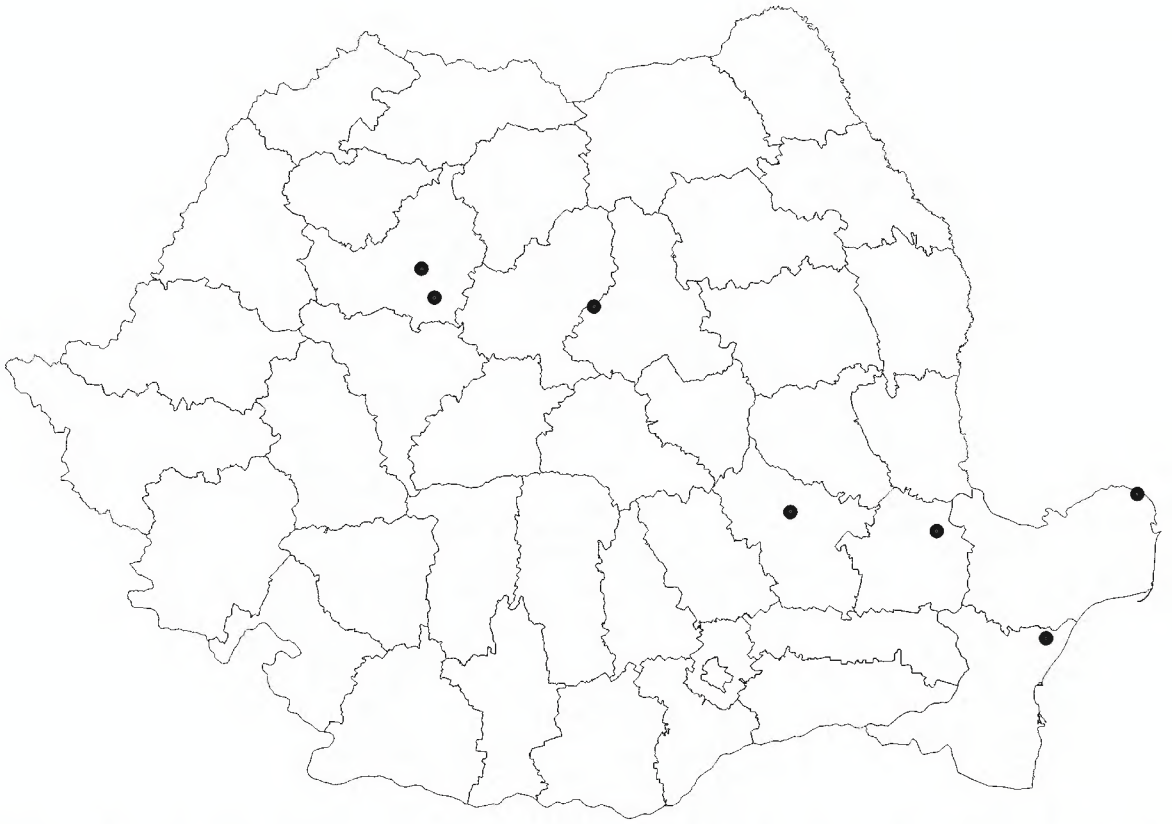

Figure 3. Distribution of *Cephalota elegans stigmatophora* in Romania based on examined material.

Cicindela (*Cicindela*) *campestris campestris* Linnaeus, 1758

Examined material: 2♂, 3 ♀, Dobra Valley (ROSCI0085 Frumoasa), mountain forest road, 3.06.2015, C. A. and G. C. (AB); Pitești: 1♂, 20.04.1954; 1♀, 24.07.1970, N. S.

(AG); 1♀, Padiș Plateau, 3.08.1967, N. S. 3♂, Padiș, Ponor Clearing [Bihor Mts], 2.07.1976, 1200 m a.s.l., forest, G. A. (BH); 2♂, Buru, Trascău Mts, 30.04–3.05.1980, G. A. (CJ); Băile Herculane: 4♂, 2♀, 15.06.1952; 1♂, 12.05.1961; 5♂, 1♀, 23.06.1961, N. S.; 1♀, 20.05.1963, A. P. G.; 1 ♂, Domogled Mt., 19.05.1963, A. P. G.; Moldova-Nouă: 1♂, 4♀, 25.05.1961; 1♀, 4.06.1973, N. S.; 1♀, Coronini Plateau, 19.05.1963, A. P. G. (CS); 1♂, Agigea, 21.08.1954, A. R.; Băneasa-Canaraua Fetii: 1♀, 27.05.1961; 2♂, 3♀, 17.05.1963; Esechioi: 1♂, 2♀, 11.05.1961; 2♂, 1♀, 26.05.1961; 1♂, 3♀, 14.05.1967, N. S.; (CT); 2♂, Nucet, 25.04.1962, N. S. (DB); 1♀, Melinești, 6.04.1965 (DJ); 3♂, 1♀, Rânca, 24.06.1963, D. P. (GJ); Comana forest: 1♀, 10.05.1962, I. D.; 5♂, 4♀, 23.05.1967, N. S.; 1♀, 11.04.1974, D. D. (GR); 1♂, 1♀, Gura Zlata, 9.08.1955, N. S. (HD); 1♂, Căldărușani, 23.03.1957, A. R.; 1♀, Cernica forest, 22.04.1955; Ciolpani: 1♂, 8.05.1949, N. S.; 1♀, 20.04.1954, N. S.; Pasărea forest: 8♂, 12♀, 29.03.1951, N. S.; 1♂, 7.05.1963, A. P. G.; 1♀, 24.04.1964, A. P. G.; 11♂, 8♀, 1.05.1966, N. S.; 9♂, 4♀, 18.05.1967, N. S.; 1♂, 1♀, Periș, R. C.; 1♀, Ștefănești, 24.04.1953, X. S.; (IF); 13♂, 1♀, Breznița, 5.05.1962, N. S.; 1♂, Eșelnița, 13.05.1969, A. P. G.; 1♀, Mraconia Valley, 16.05.1969, M. W. (MH); Azuga: 2♂, 1♀, coll. A. L. M.; 1♂, coll. Ed. F.; 2♀, Cărbunești, 25.07.1963; 1♀, Piatra Arsă, Bucegi Mts, 8.06.1957, A. R.; Sinaia: 1♂, coll. A. L. M.; 1♀, 5.07.1970, A. R. (PH); 1♂, Sădurel Valley, mountain forest road, 20.05.2015, M. S.; 1♂, Tălmăcel, Poteca Valley, forest road, 6.08.2015, M. S. (SB); 1♀, Broșteni, coll. A. L. M. (SV); 2♀, Babadag, 1.06.1961, N. S.; Cocoș Monastery: 1♂, 2♀, 4.04.1975; 1♂, 11.04.1975; 1♀, 1.04.1976, A. C.; 1♂, Greci, 6.06.1973, A. P. G.; 1♀, Măcin, coll. A. L. M. (TL); 1♀, Voinești̦a Valley, highland forest road, 21.05.2015, Mi. S. (VL); 1♂, 6♀, Bârlad Valley, coll. A. L. M.; 1♀, Bodzaer-Gbg. [Buzău Mts]; 1♂, 2♀, Kronstädter Gbg. [Brașov Mts]; 1♀, Rodnaer Gbg. [Rodna Mts], 1♂, Nagy-Hagymás [Hășmașul

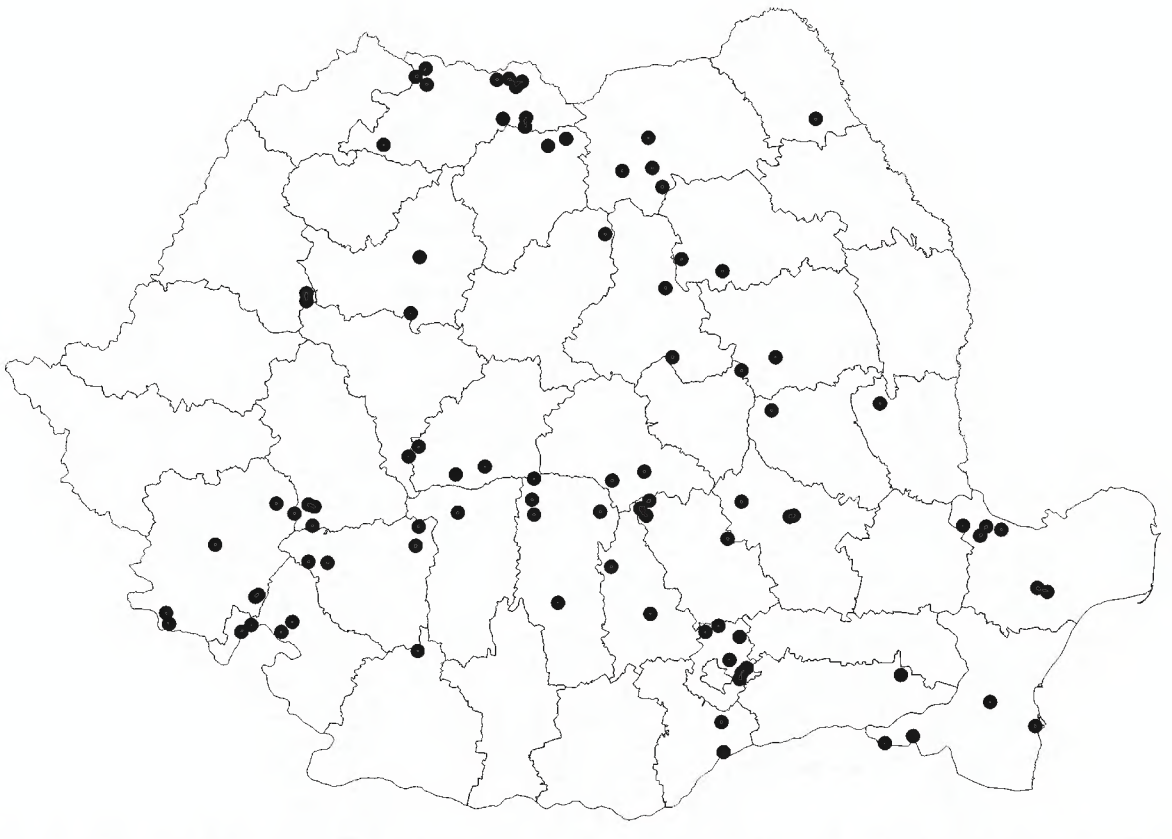

Figure 4. Distribution of *Cicindela campestris campestris* in Romania based on examined material.

Mare], coll. F. D.; 1♂, Retezat Mts, 2.07.1946, N. S.; 2♂, Lotrului Valley, 28.06.1951, X. S.; 1♀, Capra Valley, Făgăraș Mts, 2.08.1957; 1♂, Pleașa Clearing, Făgăraș Mts, 12.08.1959, N. S.; 1♂, Șandru Peak [Nemira Mts], 9–10.06.1971, I. D.; 3♂, Șaua Găuroane [Retezat Mts], 28.06.1976, D. G. (CRC); 1♀, Comana forest, coll. A. L. M. (GR); 1♀, Bârlad Valley, coll. A. L. M.; 1♀, Sinaia, coll. Ed. F.; 1♀, Novaci, R. C. (GJ) (CPC); 2♂, Tău Bistra, Bistra dam, 19.06.2015, E. I. (AB); 1 spec., Cumpăna, Arefu, 11.06.1944, A. P. G.; 1♂, 1♀, Rucăr, 07.1956 (AG); 1♂, Pârâul Boghii, Pârgărești 6.04.1990, Al. I. (BC); 1♂, Crăpătura Valley, to the Curmătura cottage, Piatra Craiului Mts, 13.06.1990 (BV); 1♂, Balauru Hill, west to Izvoru Dulce, Beceni, 23.04.2003, V. U.; Vizireanu Hill, east to Vulcanii Noroioși: 1♂, 23.04.2003, V. U.; 1♂, 16.04.2005, V. U. (BZ) 1♂, Lunca, 05.1952, Ig. C. (BT); 2♂, 1♀, Gara Jegălia, Perișoru, 3.04.1957, Ig. C. (CL); 1♂, Fânețele Clujului Reserve, 22.04.2018, A. D. (CJ); Băile Herculane: 1♂, 12.07.1962, N. S.; 1♀, 1.06.1965, A. P. G.; 1♂, 1♀, 15.06.1968, N. S.; 1♂, Domogled Mt., 19.05.1963, A. P. G. 1♂, 1♀, Moldova Nouă, 27.05.1973, N. S. 1♂, 1♀, Poiana Mărului, 12.05.2018, C. C. and G. C.; Semenic Plateau: 1♀, 2.07.2020, C. C.; 1♂, 1♀, 1400 m a.s.l., grassland, 2.07.2020, M. S. (CS); 1♂, Canaraua Fetii, 18.05.1993, C. P.; 1♂, Medgidia, 16.04.1938 (CT); 1♂, Voinești, 05.1950 (DB); 1♀, Grindu, 19.05.1992, N. G. (GR); 1♀, Cloșani, 16.06.1992 C. P.; 1♀, Tismana, 31.07.1992, G. A.; 1♂, Rânca, 25.06.1951 (GJ); 1♀, Netiș Valley, Retezat Mts, 2.05.1997, M. S. (HD); 1♂, Sântimbru Băi, 1200 m a.s.l., 22.08.1954 (HR); 1♂, Cernica forest, 9.04.1967, V. B.; 4♂, 5♀, Pasărea forest, 5.05.1954, N. S. (IF); 1♀, Topolnița Monastery, 19.04.2007, C. Ca. (MH); Elmo Clearing, 2 km upstream Repedea: 2♀, 24.06.1997, I. M.; 1♂, 24.06.1997, R. S.; 1 spec., Frumușeaua Valley, 12 km upstream Crasna Vișeului, 26.06.1997, Au. S.; 1♂, Iza spring, 6.07.1995, C. P.; 1♂, Moisei, forest range *Izvorul lui Dragoș*, 13.07.1995, Au. S.; 2♂, 1♀, Nagynyires [Mireșu Mare], 1942, E. V.; 1♂, Ocna Șugatag, Pleșca cottage, 17.07.1998, C. P.; Poienile de sub Munte: 1 spec., 30.06.1997, Au. S.; 1♀, forest range *Coșnea*, 20.06.2003, D. S.; 1♀, Sălișteа, Idișor stream, 22.06.2003, C. P.; Săpânța, forest range *Colibi*: 1♀, 5.07.1996, I. M.; 1♂, 3♀, 13.07.1996, I. M.; 1♀, 13.07.1996, C. P.; 1♀, 13.07.1996, Cr. H.; 1♀, 15.07.1996, I. M.; 1♂, Tăul lui Dumitru Natural Reserve, 7.07.1996, C. P.; 1♀, Călimani Mts, Stânceni Clearing, 22.06.2012, G. C. (MM); 2♂, Tarcău river, Fundata, 14.07.1949, Ig. C.; 1♂, 4♀, Șugăului Gorges-Munticelu Mountain Natural Reserve, 22.08.2015, C. A. (NT); 4♂, 2♀ Azuga, Ed. F.; 1♀, Ploiești, 13.06.?, Ed. F.; 1♀, Sinaia, 22.06.1945, A. P. G. (PH); 2♂, Șelătruc cottage, Gutâi Mts, 14.05.1986, C. P. and R. S. (SM); 1♂, Broșteni, coll. A. L. M.; 1♀, Câmpulung Moldovenesc, 27.04.1952, Ig. C.; 1♂, Cruce, coll. A. L. M.; 1♀, Vatra Dornei, 09.1955, Ig. C. (SV); 1♂, Luncavița, 26.06.1956, X. S.; 1♀, Visterna, 17.05.1963, Ig. C. (TL); 1♀, Lepșa, 1.07.1997, L. S. (VN); 1♂, 1♀, Ineu Peak, Rodna Mts, 8.07.1939, A. P. G. (CC).

Remarks: The specimens in the Romanian Coleoptera Collection belong to different forms/varieties of *Cicindela campestris*: *affinis* Fischer von Waldheim, 1820, *conjuncta* D. Torre, 1877, *exsuturalis* Beuthin, 1899, *luetgensi* Beuthin, 1889, *quadrimaculata* Beuthin, 1889, *quinquemaculata* Beuthin, 1889 and *pseudopalustris* Schulz, 1908.

Records: Mangalia (Jaquet 1899, Fleck 1904, Negru and Roșca 1967), wide spread in the region, on mountain sunny slopes and forest roads (Petri 1912), wide spread in Romania (Panin 1952), Măcin, Cocoș Monastery (Roșca 1976), Deva, Ozunca Băi, Băile Bálványos (Szél et al 1995), Agigea (Serafim and Maican 2004); Sehleanu Glade (Nițu, 2008), Sădurel Valley, Tălmăcel, Poteca Valley, Voineșița Valley, Dobra Valley (Stan et al. 2016).

Distribution: South Europe, Asia Minor, Caucasus, South-West Siberia up to Transbaikalia in the east, North Africa (Guéorguiev and Guéorguiev 1995).

Habitat: *Cicindela campestris campestris* lives in forested sandy areas, mountain and highland pastures (Jaskuła 2011).

Cicindela (*Cicindela*) *hybrida hybrida* Linnaeus, 1758

Examined material: 1♀, Pitești, 19.07.1950, N. S. (AG); 2♂, 2♀, Gurahonț, 19.06.1961, N. S. (AR); 1♂, 3♀, Năsăud, bank of Someșul Mic river, 6.08.1982, V. V. (BN); București: 1♂, coll. A. L. M.; 1♀, Floreasca, 19.05.1918; 1♂, 10.08.1961, A. R. (B); 1♂, Budești, 01.08.1948 (CL); Băile Herculane: 1♂, 10.06.1951, A. P. G.; 7♂, 4♀, 15.06.1952, N. S.; 3♂, 12.05.1961, N. S.; Vârciorova: 2♂, 5♀, 3.05.1961, N. S.; 1♂, 1♀, 3.06.1961, N. S. (CS); Nucet: 3♂, 1♀, 17.04.1961, 1♀, 25.04.1961, 1♀, 26.04.1961, 3♂, 3♀, 25.04.1962, N. S. (DB); 1♂, 1♀, Târgu Cărbunești (bank of Gilort river), 19.08.1956 (GJ); 25♂, 12♀, Gura Zlata (Retezat Mts), 9.08.1955, N. S. (HD); 1♀, Brănești, 31.07.1950; 1♀, Copăceni, 21.05.1950 (IF); Ciovârnășani: 1♂, 1♀, 24.06.1961, N. S.; 9♂, 4♀, 14.07.1961, N. S.; 4♂, 1♀, Cireșu, 7.07.1967, N. S.; 3♂, 4♀, Gura Motrului, 19.07.1983, C. P.; Halânga: 1♂, 1♀, 21.07.1962, N. S.; 4♂, 5♀, 22.07.1962, N. S.; 10♂,

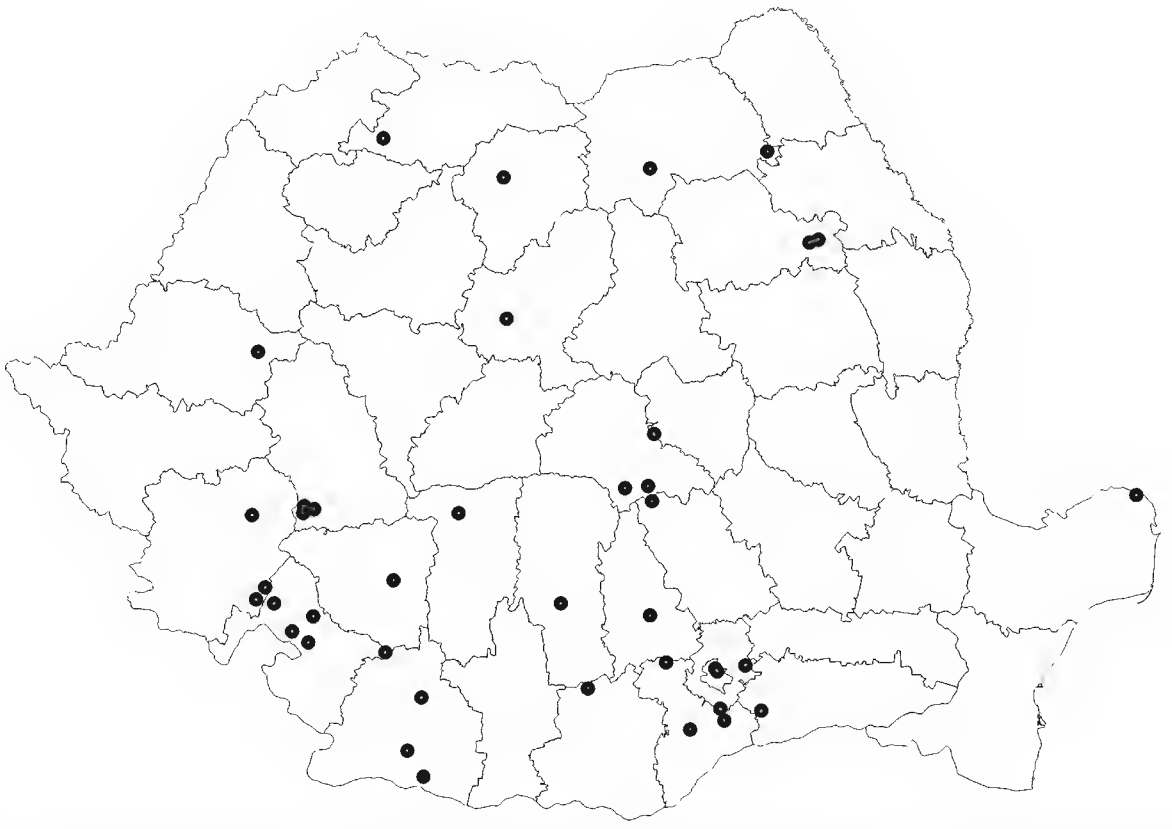

Figure 5. Distribution of *Cicindela hybrida hybrida* in Romania based on examined material.

5♀, 24.07.1962, N. S.; 1♂, 1♀, 2.08.1964, X. S. (MH); 6♂, 1♀, Vidrasău, 18.04.1976, V. V. (MS); 1♂, Gâdinți, 15.05.1967, C. T. (NT); 1♂, Palanca forest (Nicolae Titulescu), 25.06.1980, I. M. (OT); Azuga: 1♀, coll. Ed. F.; 1♂, coll. A. L. M. (PH); 2♀, Crucea, coll. A. L. M. (SV); Ciolăneasa forest: 2♂, 1♀, 21.09.1978, R. S.; 1♀, 22.09.1978, R. S. (TR); 1♀, Dobrudja, coll. Ed. F.; 1♂, 1♀, Lotrului Valley, 28.06.1951, X. S.; 2♂, Retezat Mt., 2–3.07.1966, I. C. (CRC); 1♂, Törzburg [Bran], R. C.; 1♀, Ober Tömös [Timișul de Sus] (BV); 1♂, Azuga, coll. Ed. F. (PH); 1♀, Altfluss [Olt River], coll. Fr. D. (CPC); 1♀, Gurahonț, 23.04.1961, V. B. (AR); Budești: 1♀, 15.05.1958, A. R.; 1♂, 24.07.1963, A. R. (CL); 1♂, Cerna Valley, 2.08.1958, A. R. (CS); 1♀, Giurgița, 6.06.1959; Bucovăț: 1♀, 16.06.1960; 1♂, 21.08.1960; 1♂, 1♀, 25.08.1960; 1♀, Nedeia, 11.07.1963, M. T. (DJ); 1♂, Comana forest, 18.04.1994, M. Ș. P.; 1♂, Florești, 8.07.1994, C. P. (GR); 1♂, 2♀, Lăpușnicu Mare Valley, The Retezat National Park, 17.06.2019, E. I. and I. Ș. I. (HD); 1♀, Copăcenii de Jos, 21.05.1950; 1♀, Stoenești, 19.06.1932 (IF), 6♂, 1♀, Halânga, 7.07.1977, N. S.; 1♂, Ghelmegioaia, 2.06.1972, N. S.; 5♂, Gura Motrului, 19.07.1983, C. P. (MH); 1♂, 1♀, Nagynyires [Mireșu Mare], 1942, E. V. (MM); 1♂, the bank of Siret river, Roman, 26.05.1973, C. T. (NT); 1♂, Dolhasca, 11.08.1962 (SV); 1♀, Periprava, 11.07.1962, M. W. (TL), 1♂, Lotrului Valley, 28.06.1961, X. S. (CC).

Remarks: In the Romanian Coleoptera collection four specimens are preserved under the name *C. hybrida rumelica* Apfelbeck, 1904. Three of them - Tomeni (OT) were revised and identified as *Cycindela soluta soluta* Dejean and one specimen from Caraorman forest belong to *Cicindela sylvicola sylvicola* Dejean. The specimens which were collected from Caraș-Severin, Mehedinți, Gorj, Olt, Ilfov, Călărași, Teleorman counties – Banat and Muntenia regions were former identified as *C. hybrida magyarica* Roeschke, 1891. After revised we consider that these specimens belong to *C. hybrida hybrida* Linnaeus. So, we have concluded that in the collection of the Museum there are specimens which belong only to the subspecies *Cicindela hybrida hybrida*. Both the Catalogue of Palearctic Coleoptera (Putchkov and Matalin 2003) and Site of Fauna Europaea give a certain presence of *Cicindela hybrida magyarica* and *Cicindela monticola rumelica* in Romania. Cassola and Jaskuła (2004) consider that is necessary to be confirmed the occurrence of *C. monticola rumelica* in the country.

Records: stream and river banks in hilly and mountainous areas (Petri 1912), regions of the country (1950–1952): Suceava, Iași, Bacău, Putna, Galați, Buzău, Prahova, București, Argeș, Gorj, Severin, Arad, Rodna, Sibiu and Rodna Mts, Călimani Mts, Rarău Mt., Buzău Mts, Bucegi Mts, Făgărașului Mts (Panin 1952); Târgu Neamț - Moldova River, Bucea - Bulz River, 30 km W of Cluj (Cassola and Jaskuła 2004).

Distribution: Europe, Asia Minor, Siberia, Mongolia, Transbaikalia, Manchuria (Guéorguiev and Guéorguiev 1995).

Habitat: *Cicindela hybrida hybrida* is occurring in sandy, sunny places, located near freshwater and forests (Panin 1952).

Cicindela (*Cicindela*) *soluta soluta* Dejean in Latreille and Dejean, 1822

Examined material: Pitești: 4♀, 4.05.1953, N. S.; 2♂, 20.04.1954, N. S.; 3♂, 1♀, 29.04.1955, N. S. (AG); Budești: 1♀, 11.06.1956, N. S.; 2♀, 9.07.1957, N. S. (CL); 1♀, Hagieni forest, 7.06.1965, Șt. N.; 1♂, 1♀, South Dobrudja, 13.05.1958, N. S. (CT); Nucet: 6♂, 2♀, 24.04.1961, N. S.; 11♂, 7♀, 25.04.1961, N. S.; 3♂, 6♀, 26.04.1961, N. S.; 5♂, 10♀, 27.04.1961, N. S.; 36♂, 37♀, 25.04.1962, N. S. (DB); 1♂, Hanu Conachi, 11.05.1956, V. I. R. (GL); 1 ♂, Gârla Mare, 27.03.1965, Șt. N. (MH); 2♂, 1♀, Tomeni, 1.05.1973, M. B. (under the name *Cicindela hybrida rumelica* Apf.) (OT); 2♀, Măcin, coll. A. L. M. (TL); 11♂, 9♀, Bârlad Valley, coll. A. L. M. (CRC); 2♂, 1♀, Bârlad Valley, coll. A. L. M. (CPC); Balauru Hill, Izvoru Dulce, Beceni: 1♂, 6.05.2000, V. U.; 1♂, 23.04.2003, V. U.; 3♂, 12.05.2004, V. U.; Vizireanu Hill, east to Vulcanii Noroioși: 1♂, 16.04.2005, V. U.; 1♀, 4.05.2005, V. U. (BZ); 1♂, Agigea, 26.07.1964, M. W.; 1♂, 1♀, Cernavodă, 25.04.1995, M. Ș. P. and Al. I.; 1♂, Hazarlâc Lake, 1.05.1997, Al. I.; (CT); Hanu Conachi: 1♀, 17.07.1950, Ig. C.; 1♂, 1♀, 04.1963, Ig. C. (GL); 1♂, Malu Spart, 10.06.1998, Al. I. (GR); 1♂, Hinova, 7.06.1984, R. S.; 3♂, Vrata forest, Gârla Mare, 25.05.1963, Șt. N. (MH); 1♂, Alexandria, 30.06.1958, A. R.; 1♀, Cucueți, Scrioaștea, 5.05.1966, Ig. C. (TR) (CC).

Records: Kronstadt [Brașov] (Petri 1912); regions of the country (1950–1952): Baia Mare, Stalin [Brașov], Argeș, Teleorman, București, Prahova, Buzău, Galați, Putna, Bârlad (Panin 1952), Măcin (Roșca 1976).

Distribution: Central Europe, Balkan Peninsula, South Russia, Caucasus, West Siberia (Guéorguiev and Guéorguiev 1995).

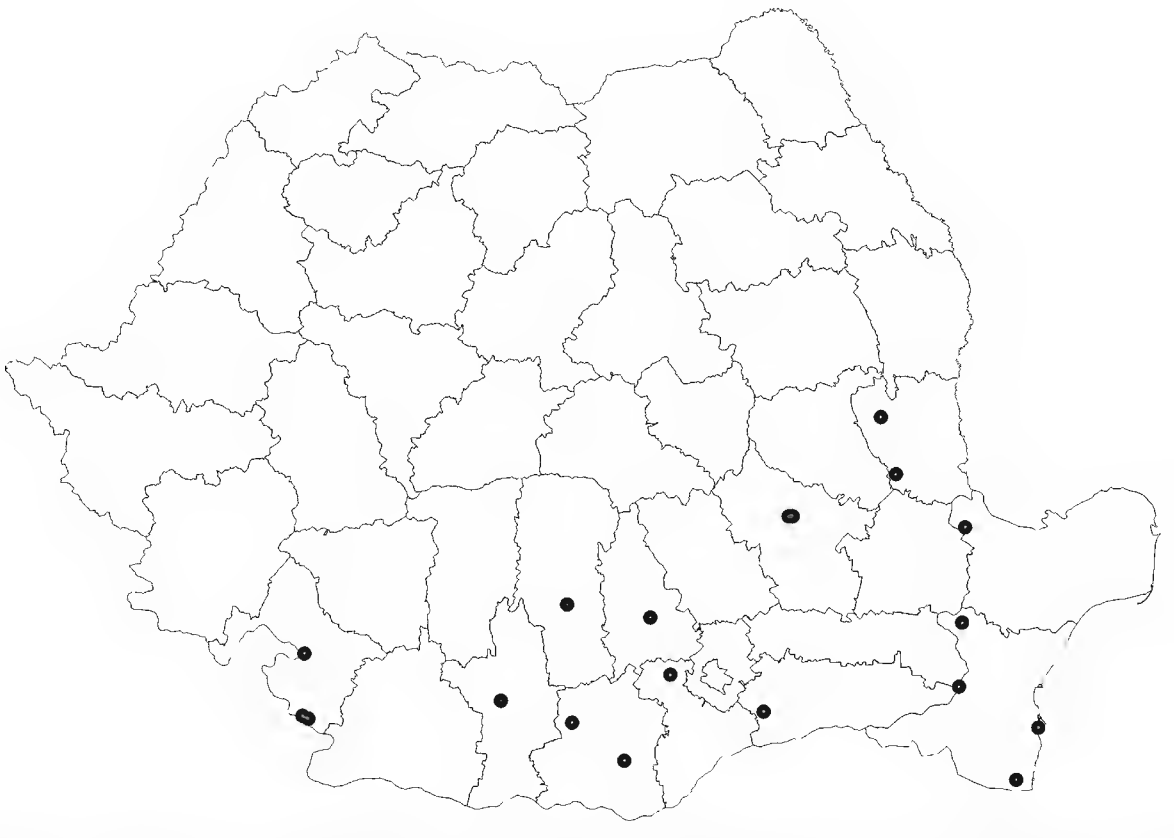

Figure 6. Distribution of *Cicindela soluta soluta* in Romania based on examined material.

Habitat: The species prefers sandy, sunny and weakly grassed grounds (Panin 1952).

Cicindela (*Cicindela*) *sylvicola* Dejean in Latreille and Dejean, 1822

Examined material: 1♀, Rucăr, 13.07.1956 (AG); 1♂, Kronstädt G. [Brașov Mts], coll. F. D.; 2♀, Schuler Gbg. [Postăvarul Mt.], coll. F. D. (BV); Băile Herculane: 1♂, 3♀, 15.06.1952, N. S.; 1♂, 28.06.1958, N. S.; 1♂, 1♀, 12.07.1960, N. S.; 9♂, 11♀, 7.05.1961, N. S.; 2♂, 2♀, 12.05.1961, N. S.; 2♂, 1♀, 23.06.1961, N. S.; 5♂, 2♀, 7.05.1962, N. S.; 3♂, 3♀, 9.05.1962, N. S.; 2♂, 5♀, 27.07.1963, N. S.; 1♀, 29.07.1963, N. S.; 3♀, 12.07.1967, N. S. (CS); 1♂, 3♀, Casinu Nou, 2.08.1978, Z. I. (HR); 2♂, 1♀, Bodi Lake, 29.05.1953 (MM); 1♀, Tarcău, 22.05.1950, N. S. (NT); Azuga: 2♀, coll. A. L. M.; 1♂, 1♀, coll. Ed. F.; 3♀, Sinaia, coll. A. L. M. (PH); 1♂, Broșteni, coll. A. L. M.; 1♂, Vatra Dornei, 12.05.1950, N. S. (SV); 1♂, Caraorman forest, 6.07.1968, M. W. (under the name *Cicindela hybrida rumelica* Apf.) (TL); 1♂, 4♀, Jidoaia Valley, mountain forest road, 21.05.2015, L. M. and M. S (VL); 2♂, 3♀, Tulnici, 20.07.1962, A. R. (VR); 1♂, Rodnaer Gbg., Boilor Valley, coll. F. D.; 1♂, Ilva Valley (Călimani Mts), 30.08.1950, N. S.; 1♀, Retezat Mt., 17.07.1956; 1♀, Capra Valley (Făgăraș Mts), 28.07.1957, N. S.; 13♂, 8♀, Meseș Mts, 01.06.1987 (CRC); 1♂, Crucea, coll. A. L. M., under the name *Cicindela hybrida sahlbergii* Fisch. (SV); (CPC); 1♂, Brașov, R. C.; 1♀, Săcele 13.07.1984, L. S.; 1♀, forest between Poiana Brașov and Râșnov, 13.05.2015, C. C. (BV); 1♂, Penteleu Mt.; 1♀, Unguriu, Măgura, 28.04.2006, V. U. (BZ); 1♀, Iara Valley, Frăsinet, 20.06.2012, M. S. (CJ); Băile Herculane: 2♂, 2♀, 18.05.1961, N. S.; 1♀, 15.06.1968, N. S.; 1♀, 17.05.1971, N. S.; 4♂, 8♀, 24.05.1971, N. S.; 4♂, 3♀, 25.05.1971,

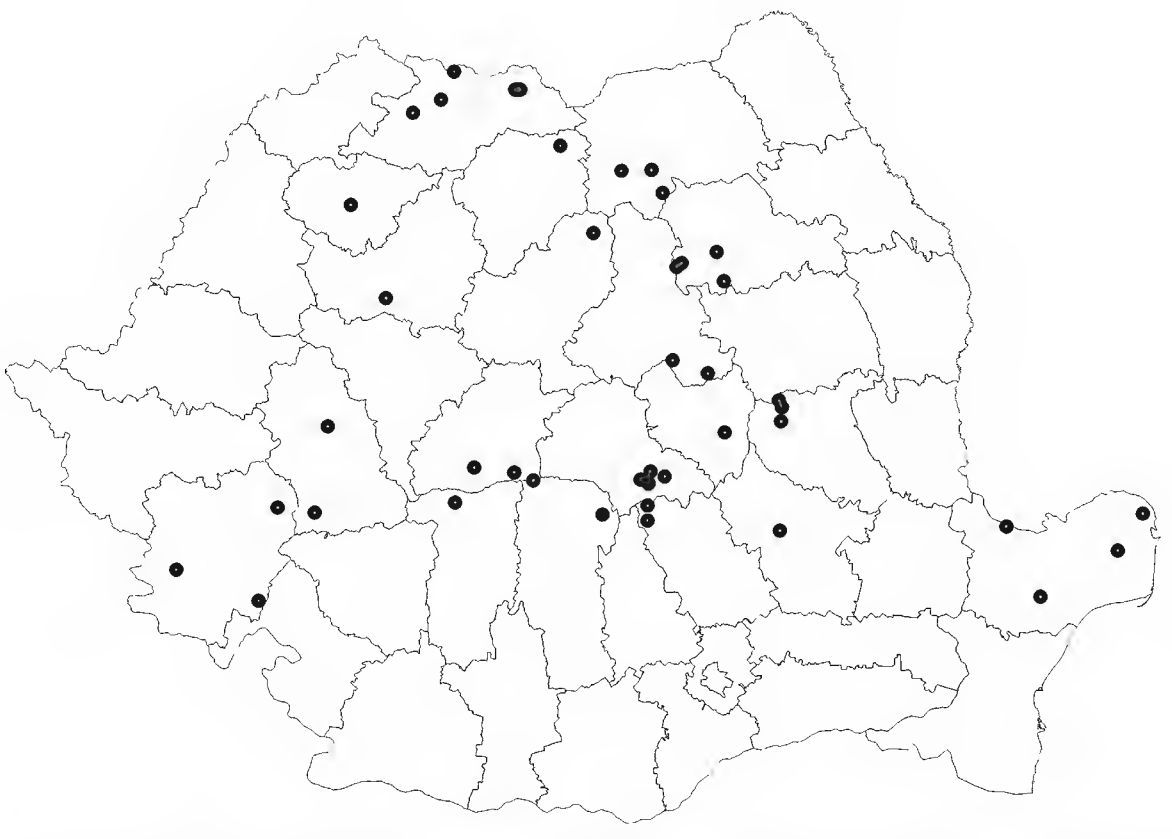

Figure 7. Distribution of *Cicindela sylvicola* in Romania based on examined material.

N. S.; 4♂, 2♀, 26.05.1971, N. S.; 1♂, 5♀, 27.05.1971, N. S.; 5♂, 5♀, 29.05.1971, N. S.; 1♀, 19.07.1978, N. S.; 1♂, 22.07.1978, N. S.; 1♀, 24.07.1978, N. S.; 1♂, 1.08.1978, N. S.; 1♀, 23.04.1986, V. B.; 1♀, Ciclova Montană, 30.06.2020, C.C.; 1♂, 4♀, Poiana Mărului, 12.05.2018, C. C. and G. C. (CS); 1♂, Covasna, 14.08.1951, A. P. G. (CV); 1♀, Deva (bank of Mureș river), 3.10.1955 (HD); 1♀, Băile Pucioasa, Sântimbru, 1952, coll. E. V.; 1♂, Bicaz Gorges, 13.08.1982, L. S. (HR); 1♂, Mara, Deseşti, 22.07.1998, C. P.; Poienile de sub Munte: 2♀, forest range *Coşnea*, 20.06.2003, D. S.; 8♂, 2♀, 19.07.2004, G. C.; 3♂, 1♀, Coșnea Valley, 23.07.2004, R. S. and G. C.; 1♀, Sighetu Marmației, The Village Museum of Maramureș, 24.07.1998, M. Ș. P. (MM); 1♀, Ardeluța, Tarcău, 24.05.1979, Ig. C.; 17♂, 18♀, Cheile Șugăului, Munticelu, 22.08.2015, C. A. (NT); 1♂, Azuga, coll. Ed. F. (PH); 1♀, Poiana Neamțului 18.07.1985, R. S.; 1♀, Sadu Valley, 7.07.2014, C. C. (SB); Meseș Mts: 1♀, 06.1966; 13♂, 8♀, 06.1987 (SJ); 1♂, Babadag forest, 20.06.1958, N. S.; 1♀, C.A. Rosetti, 07.1950, Ig. C.; 2♂, Isaccea, 06.1956 (TL); Soveja: 2♂, 3♀, Axinte forest, 14.06.2014, C. C.; 1♀, Chiua Mare, 27.06.2014, C. C. (VN) (CC).

Records: Frecker Geb. [Avrig Mts], Serbota [Șerbota Peak, Făgăraș Mt.] (Petri 1912), regions of the country (1950–1952): Severin, Gorj, Cluj, Sibiu, Stalin [Brașov], Prahova, Mureș, Suceava, Bacău, Putna (Panin 1952), Băile Bálványos (Szél et al 1995), Bistra Valley (Nițu 2008), Călimani National Park (Lotrean and Manu 2015), Jidoaia Valley (Stan et al 2016).

Distribution: Central and South Europe (Guéorguiev and Guéorguiev 1995).

Habitat: *Cicindela sylvicola* lives on dry places, especially in forests and ravines, as well as on sunny stony slopes (Panin 1952).

Cylindera (*Cylindera*) *germanica germanica* (Linnaeus, 1758)

Examined material: 1♀, Moinești, R. C. (BC); 1♀, Sărat Lake, 17.06.1962, N. S. (BR); București: 1♂, 1♀, 19.06.1980, I. M.; 1♂, 18.07.1980, I. M.; 1♂, Băneasa forest, 18.07.1973; 13 specs, 22.06.1982, Ma. T. (B); 2♂, 7♀, Budești, 24.06.1956, N. S.; 1♂, 5.06.1979, M. W. (CL); Băneasa-Canaraua Fetii: 1♂, 1♀, 23.06.1955, N. S.; 2♂, 23.07.1955, N. S.; 9♂, 8♀, 24.07.1955, N. S.; 4♂, 5♀, 29.06.1956, N. S.; 4♂, 6♀, 11.07.1960, N. S.; 20♂, 14♀, 14.07.1960, N. S.; 3♂, 3♀, 14.07.1966, N. S.; 1♀, Ester [Târgușor], coll. A. L. M.; 1♀, Galița, 10.06.1961, N. S. (CT); 3♀, Gâtanu islet (Bistreț), 24.06.1981, R. S. and D. D.; 1♀, Sarului forest (Balș), 22–26.04.1981, G. A. (DJ); 1♂, 1♀, Comana, coll. A. L. M.; 1♂, Crevedia Mare, 18.08.1976, G. A.; 1♀, Naipu, 30.06.1976, A. M.; (GR); 11♀, Pasărea forest, 11.04.1974, A. P. G.; 1♂, Vidra, 18.07.1957, A. R. (IF); 1♂, Slobozia, coll. Ed. F. (IL); 1♀, Ciovârnășani, 24.06.1961, N. S. (MH); 18 specs, Săbed, 24.06.1975, V. V. (MS); 2♂, Roman, 11.07.1971, C. T. (NT); 1♀, Palanca forest (Nicolae Titulescu), 25.06.1980, I. M. (OT); 1♀, Măneciu-Ungureni, 30.07.1967, A. R. (PH); 1♀, Letea forest (Periprava), 11.07.1962, A. P. G.; 8♂, 6♀, Măcin, coll. A. L. M. (TL); 1♂, Călimănești, 1976, I. S. (VL) (CRC); 1♀, Broșteni (Royal Estates), coll. A. L. M. (SV); 2♂♂, 1♀, Honigberg [Hărman] (BV), under the name *Cicindela germanica germanica* var. *protos* D. Torre (CPC); 1 spec., Ineu, 21.06.1963, N. S. 1

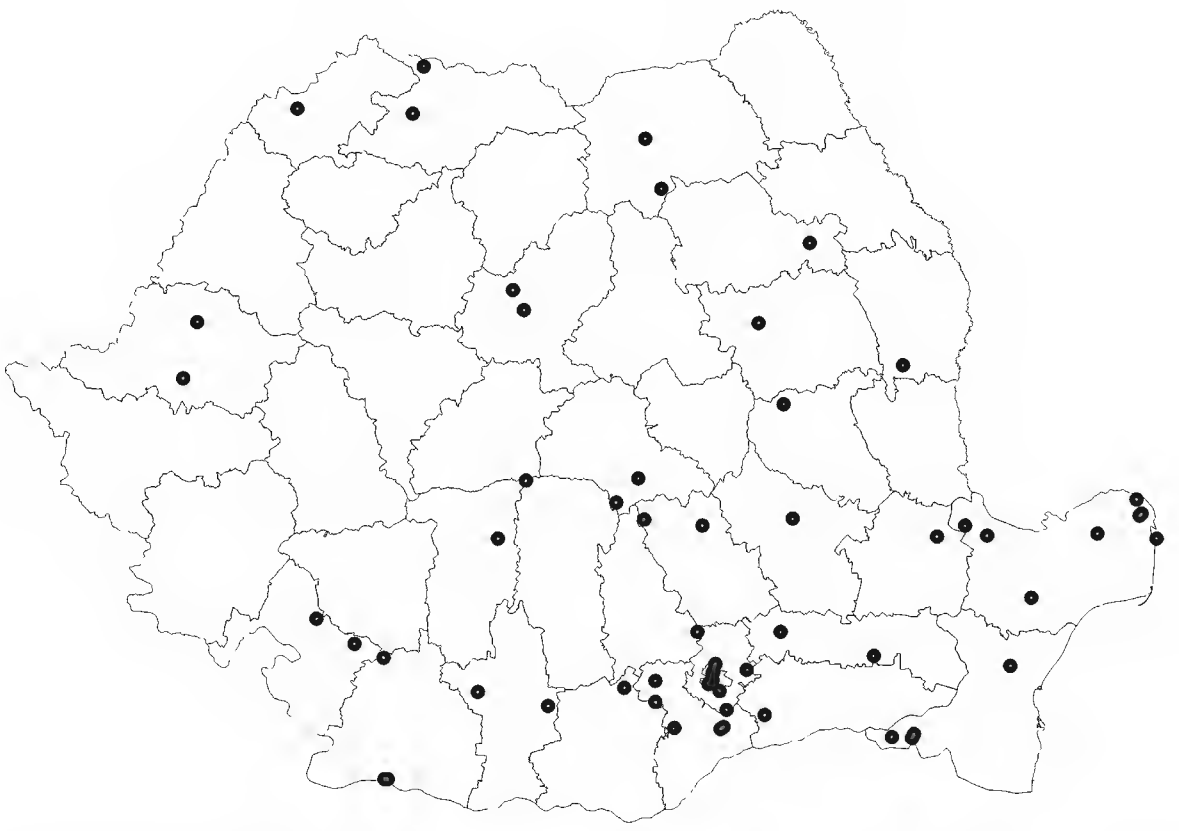

Figure 8. Distribution of *Cylindera germanica germanica* in Romania based on examined material.

spec., Șoimuș Hill, Lipova, 8.07.1976 (AR); 1 spec., Fundata, 8.07.1972, A. M.; 1 spec., Râșnov, 8.08.2018, G. P. (BV); București: 1 spec., Botanical Garden, 05.1945, Ig. C.; 1 spec., 22.06.1982, Ma. T.; 1 spec., 27.07.1992, M. N.; 1 spec., 17.08.1995, I. M.; 2 specs, 21.07.1997, M. Ș. P.; 1 spec., Cemetery Metalurgiei, 15.09.2004, D. K. (B); 1 spec., Balauru Hill, west to Izvoru Dulce, Beceni, 15.06.2002, V. U. (BZ); 1 spec., Canaraua Fetii, 11.07.1965, N. S.; 2 specs, Iortmac forest, 29.07.1952 (CT); 1 spec., Niculești forest, 4.05.1981, A. U. (DB); Bistreț: 7 specs, 23.06.1981, R. S.; 3 specs, 23–24.06.1981, I. M.; 5 specs, 23.06.1981, D. D.; 4 specs, 25.06.1981, D. D. (DJ); Comana forest: 1 spec., 7.06.1971, N. S.; 2 specs, 5.07.1972, N. S. (GR); 1 spec., Urziceni, 2.07.1983, I. M. (IL); 2 specs, Gura Motrului, 21.06.1983, I. M.; 2 specs, Strehaia, 24.06.1983, I. M. (MH); 1 spec., Baia Mare, 20.07.1964, N. S.; 1 spec., Săpânța, forest range *Colibi*, 5.07.1996, I. M. (MM); 1 spec., Târgu Mureș, 07.1956 (MS); 3 specs, Roman, 11.07.1971, C. T. (NT); 1 spec., Sinaia, 29.07.1979, N. S. (PH); 1 spec., Moftin, 1.07.1985, G. A. (SM); 1 spec., Runc, Câmpulung Moldovenesc, 21.05.1953, Ig. C. (SV); 2 specs, C. A. Rosetti, 07.1950, Ig. C.; Letea Levee: 2 specs, 12.07.1980, A. P. G.; 2 specs 19.07.1980, A. P. G.; 2 specs, Luncavița (Cetățuia), Valea Fagilor, 18.06.2019, M. S. and A. D.; 1 spec., Mila 18, Baba Rada channel, 6.04.1984, D. Mu.; 2 specs, Slava Rusă, Babadag forest, 22.06.1993, I. M.; 1 spec., Sulina, 8.07.1968, M. W. (TL); 1 spec., Poeni, 20.08.1980, M. W.; 1 spec., Zăvestreni forest, 15.06I.1979, G. A. (TR); 1 spec., Cremeneț Valley, Soveja, 12.06.2014, C. C. (VN); 1 spec., Bârlad, 28.09.1961, A. R. (VS); 2 specs, Piscul Negru Peak, Făgăraș Mts, 27.07.1974, N. S. (CC).

Remarks: In the old collections the identified specimens belonged to different forms: *apricaria* Gistel, 1840, *kuntzei* Gistel, 1840, *obscura* Fabricius, 1798 and *protos* D. Torre, 1877.

Records: Mangalia (Montandon 1906, Negru and Roșca 1967), wide-ranging in the country (Panin 1952); Iortmac (Săvulescu and Popescu-Gorj 1964); Canaraua Fetii (Negru and Roșca 1967), Măcin (Roșca 1976), Folteşti (River Chineia), Măcin, Dunavățu de Jos, Uzlina Lake, 2 Mai, Hârșova, Giurgeni, Danube River (Cassola and Jaskuła 2004); Vulcanii Noroioși (Jaskuła 2007), Transylvanian Plane (Nițu 2007).

Distribution: Europe, Asia Minor, West and Central Asia, Siberia, Transbaikalia, Mongolia, China (Guéorguiev and Guéorguiev 1995).

Habitat: The species is found on sandy fields, on the grassy edges of roads, sometimes on roads and forest paths. It has also been observed on freshwater shores (Panin 1952).

Cylindera (*Eugrapha*) *arenaria viennensis* (Schrank, 1781)

Examined material: Budești: 1♂, 2♀, 11.06.1956, N. S.; 2♀, 14.06.1959, N. S.; 2♂, 1♀, 5.07.1957, X. S. (CL); 1♀, Poiana Mare, 6.08.1982, C. P. (DJ); 1♂, 1♀, Lower Siret meadow, 14.06.1956 (under the name *Cicindela trisignata*) (GL); 1♂, 2♀, Praid, 01.07.1982, V. V. (under the name *Cephalota chiloleuca*) (HR); Ciovârnășani: 2♀, 24.06.1961, N. S.; 21♂, 9♀, 14.07.1961, N. S.; Halânga: 27♂, 17♀, 19.07.1962, N. S.; 2♂, 1♀, 2.08.1964, X. S. (MH); 1♂, 2♀, Moreşti, 19.07.1982, V. V.; 10♂, 2♀, Sânmărghita, 18.07.1982, V. V. (MS); 7♂, 3♀, Palanca forest (Nicolae Titulescu), 25.06.1980, C. P. and I. M. and R. S. (OT) (CRC); 2♀, Azuga, coll. Ed. F. (under the name *Cicindela arenaria viennensis sinuata* Panzer) (CPC); 1♂, Zătonul Cluciu, Brăila Pond, 27.05.1950 (BR); Budești: 1♂, 6.07.1957, X. S.; 1 spec., 24.07.1963, X. S. (CL); 1♂, 2♀, Bucu, 22.07.1957, Ig. C. (IL); 1♀, Ciovarnașani, 24.06.1961, N. S. (MH); 1♀,

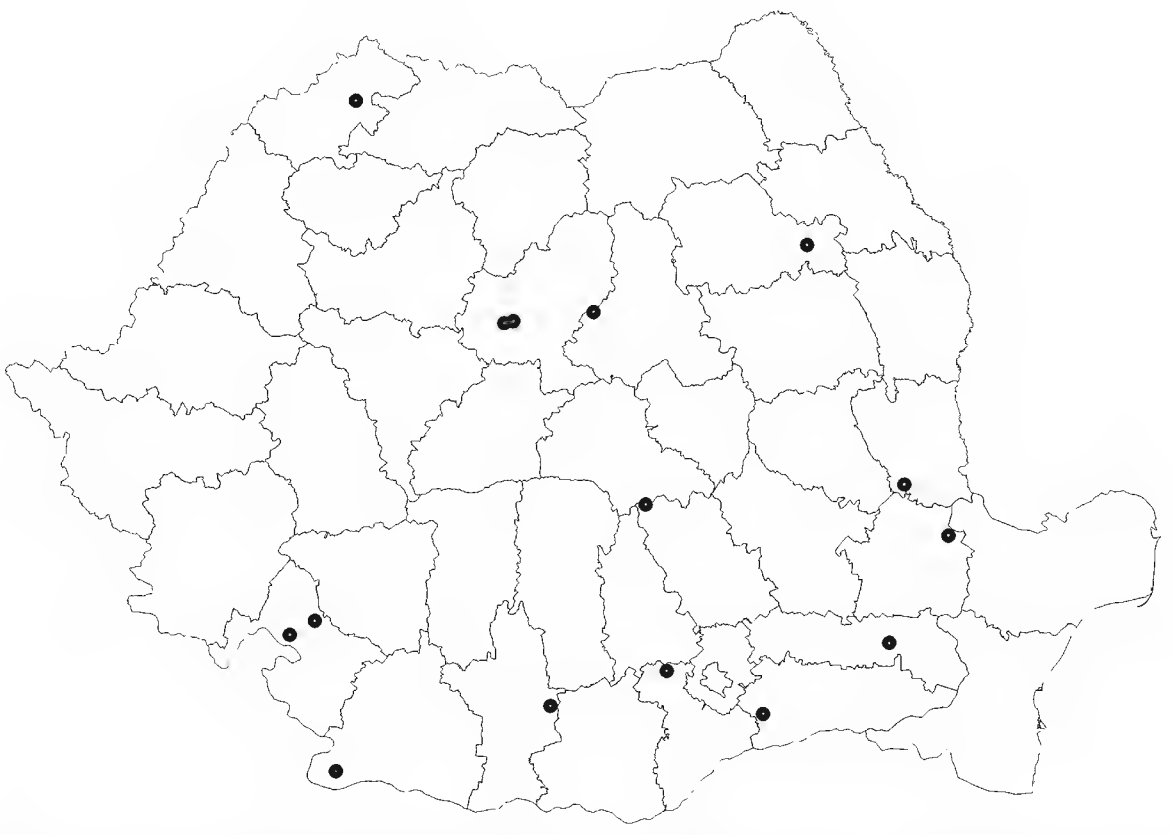

Figure 9. Distribution of *Cylindera arenaria viennensis* in Romania based on examined material.

Sânmărghita, 18.07.1982, V. V. (MS); 1♀, Roman, 26.06.1951 (NT); 3 specs, Cărășeu 30.07.1985 C. P. (SM); 1♀, bank of Argeș river, km 36 București – Pitești, 4.07.1982, Ma. T. (CC).

Records: Porcsesd [Porcești/Turnu Roșu], Mediaș, Schässburg [Sighișoara], Nagyenyed [Aiud], Záh [Zău de Câmpie], Sachs-Regen [Reghin], Karlsburg [Alba Iulia], Dicsőszentmárton [Târnăveni], Nussbach [Măieruș] (Petri 1912), regions of the country (1950–1952): Putna, Galați, Ialomița, Buzău, Hunedoara, București, Severin, Arad, Mureș, Sibiu (Panin 1952); Adjud-Trotuș River, Foltești-Chineja River, Giurgeni-Danube River (Cassola and Jaskuła 2004).

Distribution: Central and South Europe, Caucasus, Siberia, Baikal (Guéorguiev and Guéorguiev 1995).

Habitat: The species lives on the banks of rivers (Jaskuła 2011).

Cylindera (*Eugrapha*) *contorta contorta* (Fischer von Waldheim, 1828)

Examined material: 3♂, 2♀, Agigea, 27.07.1963, A. P. G. (CT); 1♂, Caraorman Levee, 15.06.1969, A. P. G.; Periprava: 3♂, 2♀, 5.07.1956, N. S.; 2♀, 24.06.1962, N. S.; 13♂, 9♀, 11.07.1967, N. S.; 2♀, 12.07.1967, N. S.; 4♀, Sacalin Island, 5.07.1971, A. P. G.; Sfântu Gheorghe: 1♀, 5.07.1971, A. P. G.; 1♀, 7.07.1971, A. P. G.; 1♂, 3.07.1972, M. W.; Sulina: 1♂, 19.07.1962, A. P. G.; 17♂, 20♀, 25.06.1962, N. S.; 2♂, 4♀, 26.06.1962, N. S.; 1♀, 8.07.1963, A. P. G.; 1♂, 1♀, 9.07.1963, A. P. G.; 1♂, 21.07.1964, A. P. G.; 2♂, 13.07.1966, A. P. G.; 1♂, 3♀, 23.07.1966, Șt. N.; 1♀, 24.07.1966, Șt. N.; 2♂, 2♀, 17.06.1969, I. D. and A. P. G.; 1♂, 1♀, 8.07.1969, A. P. G. (TL) (CRC); 2♀, Sacalin

Figure 10. Distribution of *Cylindera contorta contorta* in Romania based on examined material.

Island (TL), 5.VII.1971, A. P. G. (CPC); Letea Levee: 1♀, 7.07.1971, N. S.; 1♀, 6.07.1965, A. P. G.; 1♀, Sacalin Island, 5.07.1971, A. P. G.; Sulina: 1♂, 8.07.1963, A. P. G.; 1♀, 9.07.1963, A. P. G; 1♀, 20.07.1964, Șt. N.; 1♀, 23.07.1966, Șt. N. (TL) (CC).

Records: Constanța, Sulina, Mamaia (Panin 1952), Comarova forest (Negru 1957, Negru and Roșca 1967), Agigea, Constanța, Mangalia (Serafim and Maican 2004); Sacalin Island, Sfântu Gheorghe, Mamaia (Cassola and Jaskuła 2004).

Distribution: Romania, Moldavia, Ukraine, Russia, Turkey, Azerbaijan, Georgia, Kazakhstan, Uzbekistan, Turkmenistan, Iran, Afghanistan, Tadzhikistan, Mongolia, China (Northwest Territory) (Putchkov and Matalin 2003).

Habitat: *Cylindera contorta contorta* lives on sandy sea beaches (Jaskuła 2011).

Cylindera (*Eugrapha*) *trisignata hellenica* (Cassola, 1973)

Examined material: 2♂, 3♀, Agigea, 27.07.1963, Șt. N.; 3♂, 3♀, Mamaia, 12.07.1950, N. S. (CT); Caraorman forest: 14♂, 11♀, 23.06.1967, Șt. N. and A. S.; 1♂, 2♀, 2.07.1968, Șt. N.; Periprava: 1♀, 11.07.1967, N. S.; 1♀, 12.07.1967, N. S.; 2♂, 1♀, Sarinasuf, 23.06.1963, X. S.; Sfântu Gheorghe: 6♂, 5♀, coll. A. L. M.; 2♂, 5.07.1968, A. P. G.; 5♀, 30.06.1971, M. W.; 9♂, 11♀, 4.07.1971, A. P. G.; 24♂, 18♀, 5.07.1971, A. P. G.; 1♂, 2♀, 14.07.1971, X. S.; 5♀, 7.07.1975, A. P. G.; Sulina: 2♂, coll. A. L. M.; 48♂, 89♀, 25.06.1962, N. S.; 1♂, 1♀, 26.06.1962, N. S.; 1♂, 9.07.1962, A. P. G.; 8♂, 9♀, 19.07.1962, A. P. G. and I. D.; 2♂, 1♀, 20.07.1962, A. P. G.; 2♂, 8.07.1963, A. P. G.; 4♂, 8♀, 9.07.1963, A. P. G.; 1♂, 4♀, 10.07.1963, A. P. G.; 2♂, 6♀, 21.07.1964, I. D. and A. P. G.; 2♂, 1♀, 7.07.1966, A. P. G.; 8♂, 4♀, 11.07.1966, A. P. G.; 1♂, 1♀, 13.07.1966, A. P. G.; 2♂, 2♀, 7.07.1968, Șt. N.; 3♂, 8.07.1968, M. W.; 2♂, 18.06.1969, Șt. N.; 3♂,

Figure 11. Distribution of *Cylindera trisignata hellenica* in Romania based on examined material.

1♀, 9–12.07.1969, A. R.; 3♀, Tulcea, 26.06.1967, M. W. (TL) (CRC); 1♂, Mamaia, 12.07.1950, N. S. (CT); 2♂, Sfântu Gheorghe, coll. A. L. M.; 4♂, Sulina, 19.07.1962, A. P. G. (TL); (CPC); 2 specs, Agigea, 27.07.1963, Șt. N.; 3 specs, Constanța, 12.07.1940; 1 spec., Mangalia, 26.06.1972, Ig. C. (CT); Caraorman Levee: 1 spec., 23.06.1967, Șt. N.; 2 specs, 23.06.1967, A. S; 1 spec., 6.07.1968, Șt. N.; Letea Levee: 12 specs, 7.07.1971, N. S.; 2♂, 1♀, 12.07.1980, A. P. G.; Sacalin Island: 4 specs, 5.07.1971, A. P. G.; 1♂, 5♀, 26.06.2009, G. C.; Sfântu Gheorghe: 4 specs, coll. A. L. M.; 5 specs, 4.07.1971, A. P. G.; 18 specs, 5.07.1971, A. P. G.; 20 specs, 3.07.1972, M. W.; 2♂, 3♀, 5.08.1979; 1♂, 6♀, 13.VI.1995, I. M.; Sulina: 1 spec., coll. A. L. M.; 1 spec., 26.06.1962, N. S.; 12 specs, 19.07.1962, I. D.; 17 specs, 19.07.1962, A. P. G.; 4 specs, 6.07.1963, X. S.; 4 spec, 8.07.1963, A. P. G.; 45 specs, 9.07.1963, I. D.; 86 specs, 9.07.1963, A. P. G.; 6 specs, 10.07.1963, A. P. G.; 2 specs, 20.07.1964, Șt. N.; 11 specs, 21.07.1964, A. P. G.; 6 specs, 22.07.1964, Șt. N.; 19 specs, 23.07.1964, Șt. N.; 11 specs, 7.07.1965, A. P. G.; 2 specs, 7.07.1968, Șt. N.; 3 specs, 8.07.1968, M. W.; 3 specs, 9.07.1968, I. D.; 1 spec., 18.06.1969, Șt. N.; 3 specs, 14.06.1974, N. S. (TL) (CC).

Remarks: in the old collections all the specimens were identified as *Cicindela trisignata trisignata* Dejean, 1822.

Records: littoral of the Black Sea (Panin 1952), Comarova forest (Negru 1957, Negru and Roșca 1967), Eforie Sud (Nagy 1972), Agigea (Serafim and Maican 2004); Dunavățu de Jos, Sfântu Gheorghe, Sulina, Mamaia, Histria (Cassola and Jaskuła 2004).

Distribution: Greek, Bulgaria, Romania, Ukraine, South European Russia, Turkey (Putchkov and Matalin 2003).

Habitat: The species lives on salt marshes and sandy sea beaches (Jaskuła et al 2019).

Conclusions

In the Catalogue of Palearctic Coleoptera (Putchkov and Matalin 2003) 16 tiger beetle species and subspecies are reported for Romania. Fauna Europaea Web Service gives for Romania 12 species, other two being consider doubtful *Cephalota elegans stigmatophora* and *Cicindela sylvatica sylvatica*, while *Cicindela hybrida hybrida* and *Cicindela soluta soluta* are not present in Romanian fauna. A comparative checklist of the tiger beetles of Romania is given in the Table 1.

In south-eastern Europe, especially in lowland areas located close to the sea coast, the diversity of tiger beetles is one of the highest in the Palearctic realm (Jaskuła et al 2019). Eight out of eleven tiger beetle species were found on the Romanian seasite: *Calomera littoralis nemoralis*, *Cylindera contorta contorta, C. trisignata hellenica*, *C. germanica germanica*, *Cephalota chiloleuca*, *C. elegans stigmatophora*, *Cicindela hybrida hybrida* and *C. sylvicola*.

In addition to the 11 species, *Cicindela sylvatica* was recorded at Sighetu Marmației, Munții Pietrii, Șorămpău, beech forest, 1000 m (Szél and Zieris 2008). The

Table 1. Comparative checklist of the tiger beetles of Romania.

Nr. crt	Species/subspecies	Catalogue of Palaearctic Coleoptera	Fauna Europaea Web Service	MGAB Collections
1	*Calomera littoralis nemoralis* (Olivier, 1790)	+	+	+
2	*Cephalota besseri* (Dejean, 1826)	+		
3	*Cephalota circumdata* (Dejean, 1822)		+	
4	*Cephalota chiloleuca* (Fischer von Waldheim, 1820)	+	+	+
5	*Cephalota elegans stigmatophor*a (Fischer von Waldheim, 1825)	+	?	+
6	*Cicindela campestris campestris* Linnaeus, 1758	+	+	+
7	*Cicindela hybrida hybrid*a Linnaeus, 1758	+		+
8	*Cicindela hybrida magyarica* Roeschke, 1891	+	+	
9	*Cicindela monticola rumelica* Apfelbeck, 1904	+	+	
10	*Cicindela soluta pannonica* Mandl, 1935		+	
11	*Cicindela soluta soluta* Dejean, 1822	+		+
12	*Cicindela sylvatica sylvatica* Linnaeus, 1758	+	?	
13	*Cicindela sylvicola* Dejean, 1822	+	+	+
14	*Cicindela transversalis transversalis* Dejean	+		
15	*Cylindera germanica germanica* (Linnaeus, 1758)	+	+	+
16	*Cylindera arenaria viennensis* (Schrank, 1781)	+	+	+
17	*Cylindera contorta contorta* (Fischer von Waldheim, 1828)	+	+	+
18	*Cylindera trisignata hellenica* (Cassola, 1973)	+	+	+

specimen is deposited in the Hungarian Natural History Museum (Szél pers. comm). Six species of tiger beetle were found and collected with the occasion of various research projects focused on the beetles of Community interest (Nature 2000) in the last ten years: *Calomera littoralis nemoralis*, *Cephalota chiloleuca*, *Cicindela campestris campestris*, *C. hydrida hybrida*, *C. sylvatica*, *Cylindera germanica germanica*. These species could be considered more widely distributed in Romania, while the rest of species are quite rare due to their ecological preferences.

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